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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/014,953	12/11/2001	Lubert Stryer	AFFYP002C1	4009

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RITTER, LANG & KAPLAN
P.O. BOX 2448
SARATOGA, CA 95070

EXAMINER	
DEJONG, ERIC S	

ART UNIT	PAPER NUMBER
1631	

DATE MAILED: 06/13/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/014,953	STRYER, LUBERT	
	Examiner	Art Unit	
	Eric S. DeJong	1631	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *23 November 2004 and 20 April 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,2,5-9 and 27-29* is/are pending in the application.

4a) Of the above claim(s) *5 and 6* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1,2,7-9 and 27-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *2 sheets*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

S-0-0

DETAILED OFFICE ACTION

Election/Restrictions

Applicant's election of species A, D, and F in the reply filed on 20 April 2005 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Claims 5 and 6 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on 20 April 2005.

Priority

An application in which the benefits of an earlier application are desired must contain a specific reference to the prior application(s) in the first sentence(s) of the specification or in an application data sheet by identifying the prior application by application number (37 CFR 1.78(a)(2) and (a)(5)). If the prior application is a non-provisional application, the specific reference must also include the relationship (i.e., continuation, divisional, or continuation-in-part) between the applications except when the reference is to a prior application of a CPA assigned the same application number. Applicants apparently intend to claim domestic priority to application no. 08/618,834, now U.S. Patent No. 6,361,937, but the priority claim must be perfected by amendments

to the first sentence(s) of the specification or in an application data sheet as described above.

Specification

The disclosure is objected to because of the following informalities: Notice is given to applicants that the status of U.S. Patent Application 08/249,188, as recited on page 1, line 20 and page 5, line 32, has changed and is now U.S. Patent No. 5,571, 639. Appropriate correction is required.

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970);and, *In re Thorington,* 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims 1, 2, 7-9, and 27-29 are rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1-42 of U.S. Patent No. 6,361,937. Although the conflicting claims are not identical, they are not

patentably distinct from each other because the patented claims are drawn to computer implement methods and related computer products that are more narrowly drawn to specific steps of selecting and comparing hybridized nucleic acid probes performed by a computer. Thus, the patented claims anticipate the more broadly drawn claims of the instant application wherein the methods and related computer products involve generic steps of selecting and comparing hybridized nucleic acid probes in a computer system.

An obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but an examined application claim is not patentably distinct from the reference claim(s) because the examined claim is either anticipated by, or would be obvious over, the reference claim(s). see, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985).

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 9, and 27-29 are rejected under 35 U.S.C. 102(b) as being clearly anticipated by Cantor (IDS: U.S. Patent No. 5,503,980).

The instant claims are generally drawn to methods and computer program products that sequence a target nucleic acid. The claimed methods and computer

products comprise inputting or determining hybridization intensities of a plurality of nucleic acid probes under hybridization conditions that do not allow for identification of all nucleic acid probes that perfectly hybridize to a target nucleic acid to be sequenced. Following the inputting or determining of hybridization intensities of a plurality of probes under the above described hybridization conditions, the sequencing of the nucleic acid sequence under investigation is determined according to selected nucleic acid probes from the plurality of hybridized nucleic acid probes.

[Claims 1, 9, and 27]: Cantor sets forth a method for determining a nucleotide sequence of a nucleic acid using positional sequencing by hybridization of nucleic acid probes. See Cantor, Abstract. The sequencing of a target nucleic acid is accomplished by hybridizing that nucleic acid with a set of nucleic acid probes containing random, but determinable sequences within the single stranded portion adjacent to a double stranded portion wherein the single stranded portion of the set preferably comprises every possible combination of sequences over a predetermined range. Hybridization occurs by complementary recognition of the single stranded portion of a target with the single stranded portion of the probe and is thermodynamically favored by the presence of adjacent double strandedness of the probe. See Cantor, Column 3, lines 29-40. The thermodynamic conditions prescribed for hybridization of probes to the target sequence are such that probes containing at least one of every possible random mutation may hybridize, thus the ability to distinguish the hybridization of perfect matched and mismatched nucleic acid probes is not possible. See Cantor, column 5, lines 40-65. Cantor further asserts that hybridization chips can be used to construct very large probe

arrays which are subsequently hybridized with a target nucleic acid and that the analysis of the hybridization pattern of the chip provides an immediate fingerprint identification of the target nucleotide sequence. Further, patterns can be manually or computer analyzed, but it is clear that positional sequencing by hybridization lends itself to computer analysis and automation. See Cantor, column 7, lines 6-18.

[Claim 2]: Cantor provides a specific example of positional sequencing using the disclosed hybridization methodology, wherein nucleic acid probes included matched and mismatched sequences relative to the target sequence. See Cantor, Example 13, column 18, line 42 through column 19, line 28. The test sequences used were compared to arrive at the sequence of the target nucleic acid. See also, Figure 12.

[Claim 28]: Cantor discloses an alternative embodiment of the methodology involving the step of cleaving a plurality of nucleic acid targets to form fragments of various lengths which are at least partly single stranded. The sequencing target is then achieved by identifying the nucleotide sequences of the hybridized portions of the fragments, and comparing the identified nucleotide sequences to determine the full nucleotide sequence of the target. See Cantor, column 8 line 63 through column 9, line 12.

[Claim 29]: Cantor also discloses an alternative embodiment of method wherein the nucleic acid of interest is labeled at one terminal site with a first detectable label, labeled at an internal site with a second detectable label, and then by comparing the relative amounts of the first label with the relative amounts of the second label determine the position of the partial sequence. See Cantor, Column 4, lines 16-23.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

Claims 1, 2, 7-9, and 27-29 are rejected under 35 U.S.C. 102(e)(2) as being clearly anticipated by Lipshutz et al. (IDS: U.S. Patent No. 5,733,729).

[Claims 1, 7-9, and 27]: Lipshutz et al. sets forth the methods, computer systems, and related computer products for analyzing and determining nucleic acid sequences by calculating probabilities for unknown bases of a target sequence on the basis of hybridized nucleic acid probes. See Lipshutz et al., Abstract and Figure 3. In one embodiment, the identity an unknown bases in a sample nucleic acid sequence are determined by the steps of inputting a plurality of hybridization probe intensities, each of the probe intensities corresponding to a nucleic acid probe, for each of the plurality of probe intensities, determining a probability that the corresponding nucleic acid probe best hybridizes with the sample nucleic acid sequence, and calling the unknown base according to the nucleic acid probe with the highest associated probability. See Lipshultz et al., column 2, lines 6-14.

[Claim 2]: The demonstration provided in Figure 8 of Lipshulz et al. clearly indicates that the mismatched information of hybridized nucleic acid probes against the reference sequence is utilized in the sequence determination process. Further, Column 7, line 66 through column 8, lines 46 of Lipshulz et al. clearly set forth that the sequence determination process clearly involves probes that are not perfectly complimentary and hybridized to a target sequence.

[Claim 28]: An alternative embodiment of the disclosed methodology and computer related products is performed wherein nucleic acid probes are hybridized to only a portion of the target nucleic acid sequence to be sequenced. See Lipshutz et al., column 2, lines 44-59. Under a reasonably broad interpretation, the use of only a portion of a target nucleic acid to be sequenced reads upon the claimed limitation of fragmenting the nucleic acid before contacting the nucleic acid with a set of oligonucleotide probes.

[Claim 29]: Lipshutz et al. teaches that in the construction of DNA chip arrays utilized in the sequencing and hybridization procedures, a fluorescent label may be attached to the target nucleic acid sequence prior to hybridization with a set of nucleic acid probes. See Lipshultz et al., Column 1, lines 41-54 and Figure 6.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Eric S. DeJong whose telephone number is (571) 272-6099. The examiner can normally be reached on 8:30AM-5:00PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ardin Marschel, Ph.D. can be reached on (571) 272-0718. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Any inquiry of a general nature or relating to the status of this application should be directed to Legal Instrument Examiner, Tina Plunkett, whose telephone number is (571) 272-0549.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Patent applicants with problems or questions regarding electronic images that can be viewed in the Patent Application Information Retrieval system (PAIR) can now contact the USPTO's Patent Electronic Business Center (Patent EBC) for assistance. Representatives are available to answer your questions daily from 6 am to midnight (EST). The toll free number is (866) 217-9197. When calling please have your application serial or patent number, the type of document you are having an image problem with, the number of pages and the specific nature of the problem. The Patent Electronic Business Center will notify applicants of the resolution of the problem within

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J.S. Brusca 9 June 2005
JOHN S. BRUSCA, PH.D
PRIMARY EXAMINER